



Foreword

Diabetes is the fastest growing health problem of our time and, without careful management, also one of the most devastating.

One in 16 people in the UK, and one in seven of those in hospital now have diabetes – leaving the NHS scrambling to keep up. Diabetes costs the health service £10 billion every year – mostly just to deal with its consequences, which can include sight loss, limb amputation and kidney failure. Many of us now have family or friends with diabetes, but the UK is still failing to recognise the impact of diabetes and the urgent need for action.

Research is our hope for the future. Everything we know about caring for diabetes is a result of research – and UK scientists have already contributed to life-changing breakthroughs. But research is expensive, and for every £1 the UK spends on caring for diabetes, it invests just half a penny on research. If we want to put an end to all forms of diabetes for good, that has to change.

Diabetes UK is leading the fight for a world where diabetes can do no harm. We know we can only do this by bringing people together to work in partnership to support those living with diabetes, prevent Type 2 and make research breakthroughs with the aim of finding a cure. Our support for research also meets a critical need: by nurturing the projects, people and ideas that will transform the treatment and prevention of diabetes, and lead us to a cure.

This strategy sets out the actions we will take over the next five years to secure UK-wide support for the research needed to fight diabetes. It shows how we'll get the biggest impact for our money, how we'll form new partnerships to encourage greater overall investment and how we will focus our efforts to complement and build on the work of other funders.

We can't do this alone. Every penny we spend on research results from a generous donation of time or money. Whether you are someone with diabetes, a Diabetes UK group member, a healthcare professional, a research funder, a policy-maker, father or mother, brother or sister, son or daughter, partner, carer or friend – we hope you will give us your support.

Find out more:
www.diabetes.org.uk/research
Make a donation:
www.diabetes.org.uk/donate-your-way
Contact us:
research@diabetes.org.uk

Our Goals



How we will achieve them



A national emergency

Diabetes is a big and growing problem in the UK with huge costs to our health system and serious consequences for people living with the condition.

Big

Diabetes already affects **3.9 million** people living in the UK (1 in 16).

Tragic

Every year, around **20,000** people with diabetes die early in England and Wales alone, and people with diabetes suffer nearly **200,000** devastating complications.

Costly

Managing diabetes costs the NHS **£10 billion** every year.

Growing

Over **280,000** new cases are diagnosed every year and we estimate that **5 million** people will have the condition by 2025.

The complications of diabetes



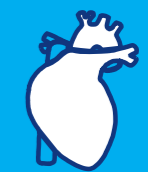
Increases risk of **dementia**



Doubles risk of **depression**



A leading cause of **sight loss**



Doubles risk of **heart disease and stroke**



A key cause of **kidney disease and kidney failure**



Increases risk of complications in **pregnancy**



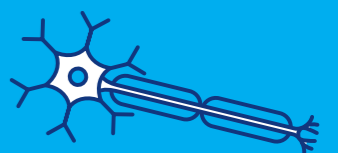
Leads to over **140 amputations** every week



Increases risk of **sexual dysfunction**



Untreated, severely high or low glucose levels can cause **coma** or even **death**



A major cause of **nerve pain and nerve damage**



“Within just a few weeks of switching treatment, it became obvious that Jack’s blood sugar levels were really stable. He had stopped collapsing on the floor and he suddenly started smiling and laughing. For us, it really was a miracle.”

Emma Matthews, Essex, the mother of Jack, who has neonatal diabetes

A very personal story

Unless you are close to someone with diabetes, it can be hard to understand what it’s like to live with every day.

Everyone who has diabetes deals with it in their own way. Self-managing your own diabetes is the only way to avoid serious complications –and can be a daily chore, especially for children and young people. Getting it right requires great expertise, constant discipline and can be a life-long challenge.

The different types, causes and effects of diabetes are often misunderstood, especially by the media. As a result, diabetes can be frustrating or distressing to live with and even lead to depression

“Our family is really struggling to cope.”

“The thing I’m most worried about is the complications.”

“As a doctor, I can’t think of another condition that is as challenging to self-manage.”

“Having diabetes is tough, but it still doesn’t stop me.”

A family of conditions

Diabetes is a condition where the amount of glucose in your blood is too high because the body cannot use it properly.

Type 1 and Type 2 are the most common forms of the condition. Type 1 is caused by problems with the immune system, and usually appears before the age of 40 and especially in children. Type 2 tends to develop in adults and is linked to lifestyle and age, but also to genetic factors. There are also several, rarer forms of diabetes.

It’s shocking that many people are still diagnosed with the wrong form of diabetes, leading to the wrong treatment. Even with the right diagnosis, ‘one-size-fits-all’ treatments do not work well for everyone.

Research is making it easier for doctors to make the right diagnosis and match the right treatment to the right person. We support research into all forms of diabetes – an approach that will ultimately benefit everyone with the condition, regardless of which form they have.

A revolution for diabetes diagnosis

Ground-breaking research into the rarest forms of diabetes now means we can identify people who have been incorrectly diagnosed with Type 1 or Type 2 diabetes and ensure they get the right treatment.

Neonatal diabetes and Maturity Onset Diabetes of the Young (MODY) are caused by changes in single genes. Neonatal diabetes is a severe form of the condition, but affects less than 100 people in the UK and is usually diagnosed within six months of birth. MODY affects 1–2 per cent of people with diabetes in the UK.

Because these conditions are rare, doctors may not spot them, and they can be misdiagnosed as either Type 1 or Type 2 diabetes at first.

Thankfully this situation has been transformed by research we’ve funded at the University of Exeter. New genetic tests can now identify these forms of diabetes and help some people switch from life-long insulin therapy to tablets. This leads to dramatic improvements in their quality of life.

Why we must do more

The UK government and other key funders make vital investments in diabetes research, but diabetes is not a priority for them.

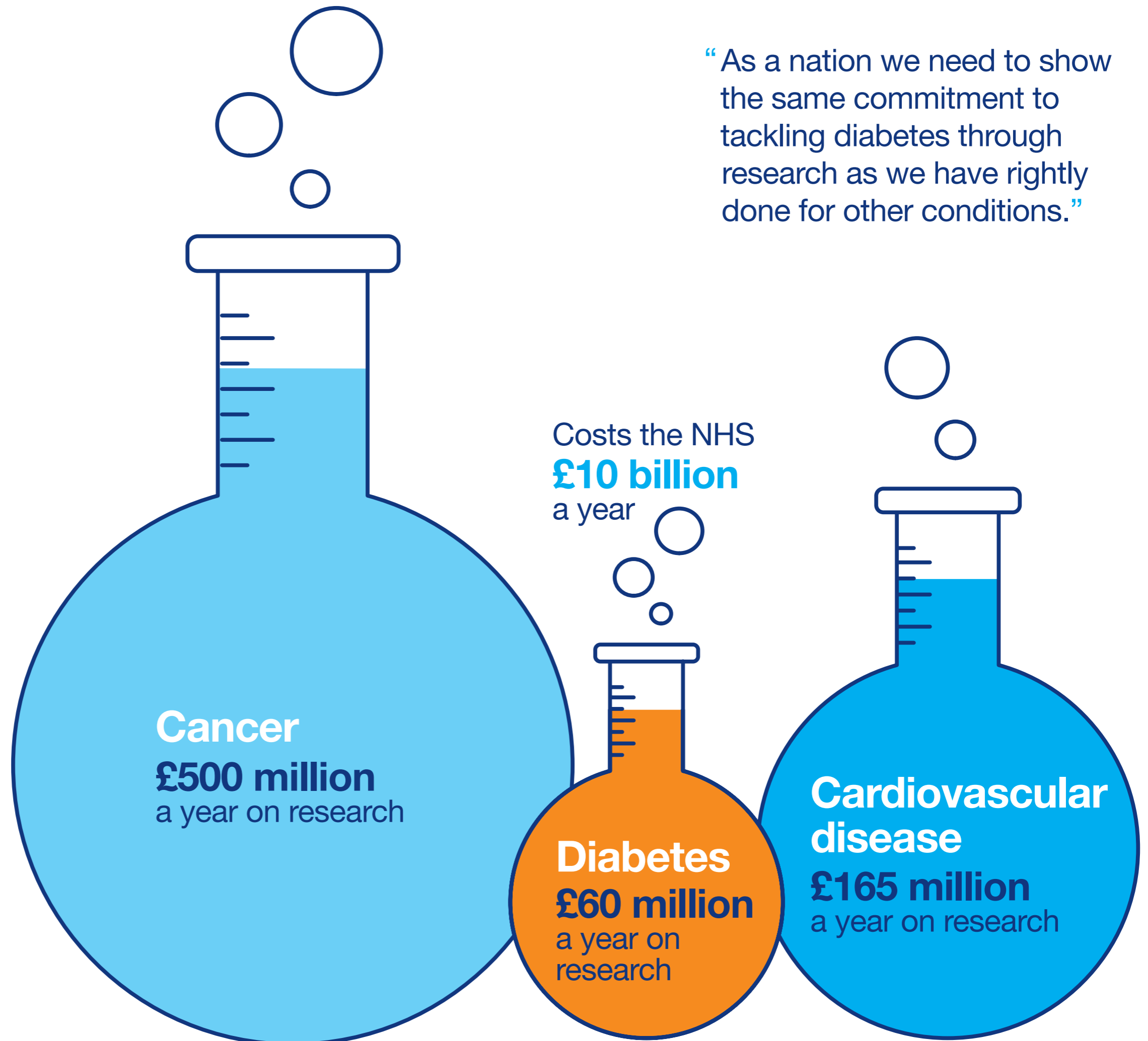
This lack of urgency means we cannot even say exactly how much the UK spends on diabetes research. We estimate that no more than £60 million was spent in 2014.

An estimated 5 million people will have diabetes by 2025 but the UK spends much less on diabetes than for other major health conditions. We have worked carefully to understand how much is spent on diabetes care in the NHS, so we know that for every £1 spent caring for diabetes, just half a penny goes to research.

Demand for our support for research has never been higher and continues to grow. In 2014 alone we spent £7 million on high-quality projects to reduce the impact of diabetes on people's lives. However, our work depends entirely on charitable donations and every year we have to turn away millions of pounds worth of new, high-quality studies, simply because we don't have the money. This is holding back research progress and weakening our ability to improve diabetes care.

Sources:
Research spend figures are derived from the UK Health Research Analysis 2014 www.hrcsonline.net/pages/uk-health-research-analysis-2014. Figures include research infrastructure spending by funders of specific medical conditions, but do not include an attribution of infrastructure spending by research funders focused on multiple health conditions.
NHS spend for diabetes was sourced from Hex et. al., Estimating the current and future costs of Type 1 and Type 2 Diabetes in the UK, *Diabet. Med.* 29, 855–862 (2012); [dx.doi.org/10.1111/j.1464-5491.2012.03698.x](https://doi.org/10.1111/j.1464-5491.2012.03698.x).

“As a nation we need to show the same commitment to tackling diabetes through research as we have rightly done for other conditions.”





Our research goals

Diabetes UK has been a pioneer of research into all forms of diabetes for over 80 years. Everything we know about diabetes, every treatment, technology and diabetes service only exists thanks to research.

To meet the challenge of diabetes we will work towards the following three research goals.

Each of these is a huge task, but our research has already led to real breakthroughs and today the opportunities for change are just as big as the challenges. Every new partnership and every penny donated is a step towards meeting these goals.



Care

Improve care and self-management for people living with diabetes today.



Cure

Find ways to cure diabetes in those who have it now or develop it in the future



Prevent

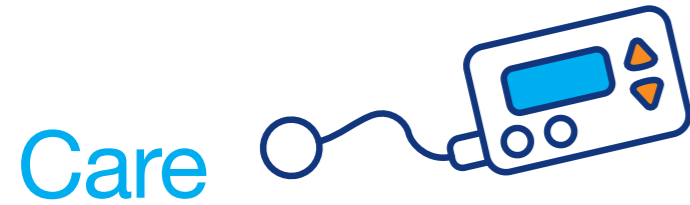
Stop diabetes and its complications before they develop in those at risk



Artificial pancreas trial leader, Professor Roman Hovorka, University of Cambridge

“Overnight I can find it hard to predict what will happen with my blood glucose levels. This system got rid of all the guess work.”

Lisa Gaff
Artificial pancreas trial participant



Care

Diabetes is a serious, life-long condition that most people have to manage themselves. This can require a great deal of effort and expertise and usually gets harder over time.

With good care and access to the right treatments, technologies, support and advice, people with diabetes are now able to live longer, healthier lives than ever before. But too many people are still struggling to access good care and the right education. We must make it much easier for people to manage their own diabetes day-to-day and help them to reduce the risk of long-term complications.

Research gives us the evidence we need to advance diabetes care and be confident that our work is making a real difference. We know that research can improve care and self-management further, but progress is not as fast as it should be because of a lack of investment.

We will ensure that improving diabetes care becomes a UK research priority and that specific priorities for research in this area are identified. We will also see that research evidence is used to press for a better deal for people with diabetes.

Our progress

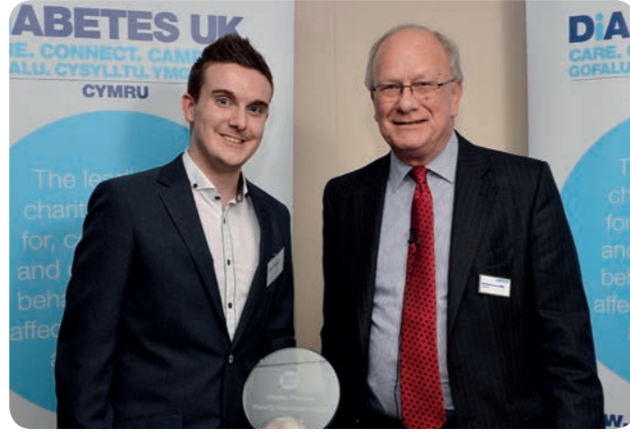
Care for people with diabetes has improved dramatically over the last 80 years. We're proud that our research funding has helped deliver critical components of modern diabetes care, including:

- Development of structured education courses to help people understand and self-manage their diabetes.
- Trials of the first ever insulin pen, studies that led to the first use of an insulin pump and the technology behind most modern glucose meters. Together these advances help millions of people around the world to manage their glucose levels more effectively.
- Successful home trials of an 'artificial pancreas', which provides hope for a brighter future.



Meet Lisa

Lisa is one of 24 adults living with Type 1 diabetes who took part in a 2014 trial of an “artificial pancreas” in their own home. This cutting-edge research at the University of Cambridge was funded by Diabetes UK. The prototype device allows a continuous glucose monitor and an insulin pump to work together in a ‘closed loop’. It led to a 13.5 per cent improvement in night-time blood glucose levels. We look forward to seeing this work extended through larger trials to make all forms of insulin-treated diabetes easier to manage with fewer complications.



Richard Lane with Dr James Pearson, Diabetes UK PhD Student and Inspire Award Winner

“ I’m a living example of how Diabetes UK-funded research and treatment makes a difference. My life, and the lives of my wife and children, have changed dramatically since the islet transplants.”

Richard Lane, OBE
Ambassador for Diabetes UK



‘Cure’ is a simple word for something that is highly complex. Ideally, a cure would make diabetes go away and not return, so that treatments are no longer needed. Today, real progress is being made and the search for cures for all forms of diabetes provides a source of new treatments and genuine hope.

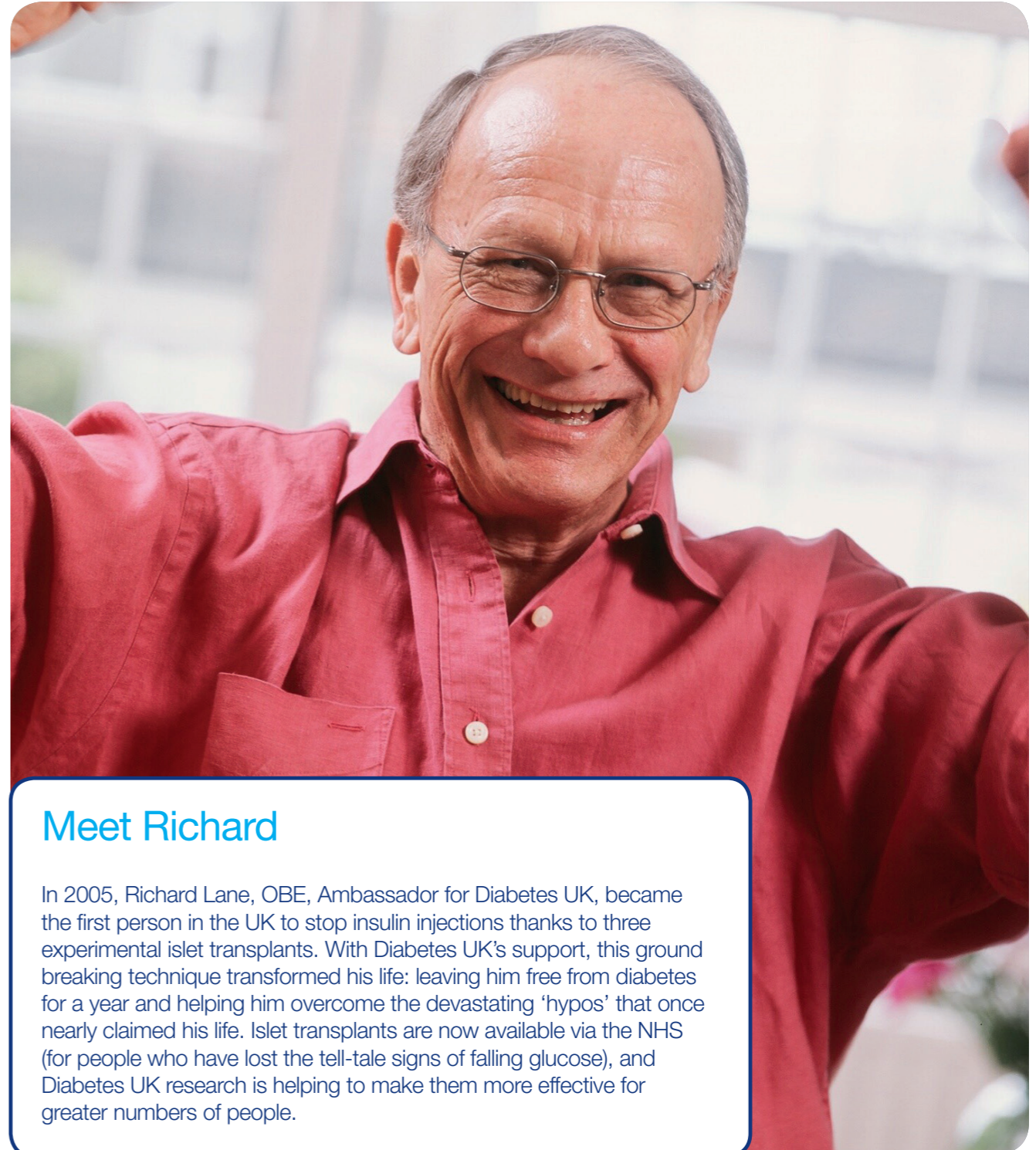
Cures will only be found if we can improve our understanding of diabetes. In Type 1 diabetes we need to eliminate the immune problems that destroy the cells which make insulin, but also restore cells that have already been lost. In Type 2 diabetes we need to reduce resistance to insulin around the body and boost insulin production. Working to reach these goals will also lead to new and better treatments along the way.

We will continue to invest in research that brings us closer to a cure for all forms of diabetes and partner with others who can help to increase the pace of change.

Our progress

A complete cure for diabetes is still some years away, but new techniques that aim to free people with diabetes from conventional treatments are already becoming a reality, with help from Diabetes UK.

- Our work towards a vaccine (see page 25) could be one vital component of a cure for Type 1 diabetes.
- Our support for research into the rarer single-gene forms of diabetes means that people can now get better treatment with tablets instead of insulin (see page 7).
- Weight loss surgery is currently the only NHS treatment offered for Type 2 diabetes remission. We need alternative options that work for more people at a lower cost. In 2011, our research found that remission was also possible using a low-calorie diet. If this works in routine care, it could provide a better weight-loss solution for larger numbers of people and transform the way Type 2 diabetes is managed by the NHS. We’re supporting a major trial to find out.



Meet Richard

In 2005, Richard Lane, OBE, Ambassador for Diabetes UK, became the first person in the UK to stop insulin injections thanks to three experimental islet transplants. With Diabetes UK’s support, this ground breaking technique transformed his life: leaving him free from diabetes for a year and helping him overcome the devastating ‘hypos’ that once nearly claimed his life. Islet transplants are now available via the NHS (for people who have lost the tell-tale signs of falling glucose), and Diabetes UK research is helping to make them more effective for greater numbers of people.



Diabetes UK funded research in Newcastle involved driving eye screening equipment around in an ambulance to reach people with diabetes

“ I’m so grateful to the team at Newcastle. You hear some horror stories of people going completely blind. I wasn’t that bad but I could have been if I hadn’t been treated early.”

Mark Thompson
Westerhope

Prevent

The ultimate goal of diabetes research must be to prevent as many people as possible from developing the condition in the first place. For people who already have diabetes, we must find new ways to stop the devastating complications that can damage health and quality of life in the long-term.

Prevention is a truly enormous challenge and will require long-term commitment. We are already working with NHS England to put evidence into action with the first ever National NHS Diabetes Prevention Programme for Type 2 diabetes. But we still need to learn how to get the most out of this type of initiative.

Type 1 diabetes and the rarer forms of diabetes cannot yet be prevented, but our understanding improves every year and only research can give us the answers.

Over the next five years, we will continue to support research to help us prevent all forms of diabetes and diabetes complications.

Our progress

We’re already making huge strides towards the prevention of diabetes complications. But now we’re also pioneering research to take the next step and prevent diabetes itself.

- We supported UKPDS – the longest and largest study of Type 2 diabetes. It compared different forms of treatment and showed that the right treatment could dramatically reduce complications.
- We were a founding partner of the National Prevention Research Initiative, established to reduce the impact of chronic health conditions, including diabetes.
- Preventing the immune attack that destroys cells that make insulin in people with Type 1 diabetes is critical for both prevention and cure. Thanks to our Tesco partnership and help from JDRF, we’re supporting researchers across the UK working together to develop a vaccine to prevent Type 1 diabetes in children.
- Our support for studies of the genetics and family history of Type 1 will pave the way for screening to support prevention.



Meet Mark

Mark is one of millions of people who now have regular eye screenings every year as part of the current UK screening programme for retinopathy. Consequently his risk of losing of sight is significantly reduced. Sight loss as a result of retinopathy is one of the most distressing complications of diabetes. However, this is now less and less common among people of working age thanks, largely, to research we supported at Newcastle University in the 1980s. Our support led to the current programme of screening which saves the sight of hundreds of people every year.



How we'll achieve our goals

To help us achieve our goals and maximise the benefit of research for people with diabetes, over the next five years we will:



Increase our funding for diabetes research



Increase our support for the diabetes research leaders of the future



Grow investment in UK diabetes research by our partners



Give people with diabetes a louder voice in research



Professor Sir Philip Cohen with his wife and fellow researcher Professor Tricia Cohen and colleagues

“ It’s always very difficult for young researchers starting out. Diabetes UK was really instrumental in supporting me. I always had a Diabetes UK grant from 1973 until we solved this problem in 1998 – without that we probably couldn’t have done it.”

Professor Sir Philip Cohen
University of Dundee

Increase our funding for diabetes research



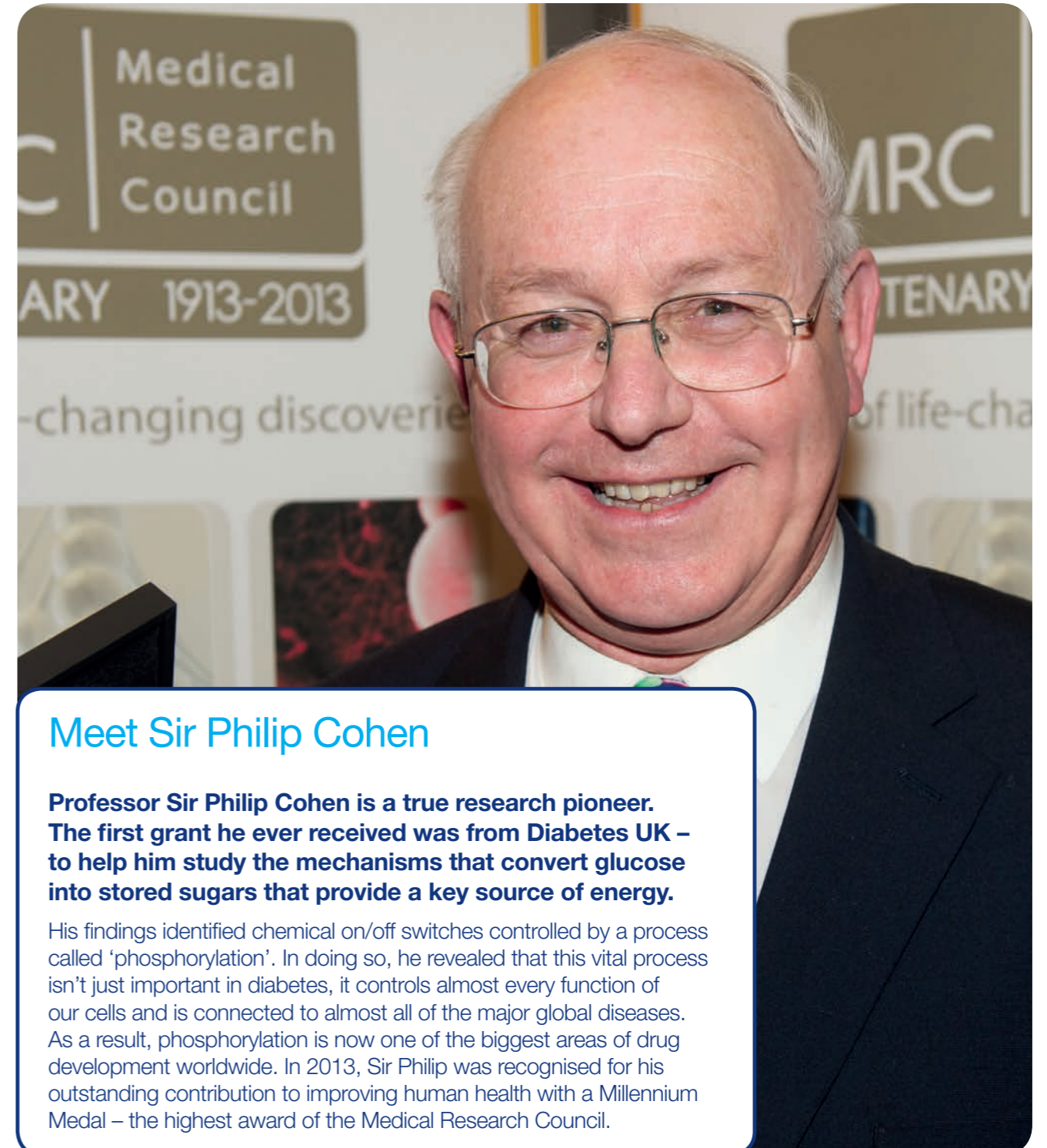
We are the largest research funder in the UK. Dedicated to diabetes alone, we allow researchers to ask any question they think is important about any form of diabetes. UK diabetes researchers tell us that our support is vital in helping them to get their life-changing ideas off the ground.

Whether a researcher is at the beginning of their career, or simply following a new path, we take our role in seeding fresh ideas seriously. That’s why, over the next five years, we will increase our support for ground breaking ideas proposed by the UK research community.

With our funding, we expect the best ideas to grow, challenge current thinking and provide new ways to improve the lives of people with diabetes.

We will:

- Increase our year-on-year support for new project grants.
- Help our researchers gain follow-on support for the later stages of their work.



Meet Sir Philip Cohen

Professor Sir Philip Cohen is a true research pioneer. The first grant he ever received was from Diabetes UK – to help him study the mechanisms that convert glucose into stored sugars that provide a key source of energy.

His findings identified chemical on/off switches controlled by a process called ‘phosphorylation’. In doing so, he revealed that this vital process isn’t just important in diabetes, it controls almost every function of our cells and is connected to almost all of the major global diseases. As a result, phosphorylation is now one of the biggest areas of drug development worldwide. In 2013, Sir Philip was recognised for his outstanding contribution to improving human health with a Millennium Medal – the highest award of the Medical Research Council.



Professor Michael Trenell in the MoveLab

“ The Fellowship from Diabetes UK catalysed my career. It enabled us to establish MoveLab as a centre of excellence. The team has grown into the most highly-qualified group of physical activity and exercise researchers in the UK. Without my Diabetes UK Fellowship this wouldn’t have been possible.”

Professor Michael Trenell,
Newcastle University

Increase our support for the diabetes research leaders of the future



Pioneering diabetes research cannot take place without expert scientists and medical researchers to design and lead new studies and clinical trials. Investing in the careers of up-and-coming specialists generates a life-long return for people living with diabetes.

We help diabetes researchers to take their first steps and to become independent leaders. Many of the nation’s top diabetes experts are now able to attract millions of pounds of support from the UK’s biggest research funders because they got their start from us. But we need many more of the best researchers to focus their work on the growing challenge of diabetes.

It’s vital that we help a new generation of talented young people build life-long careers in diabetes research, so their work can be translated into improvements for people with diabetes.

We will:

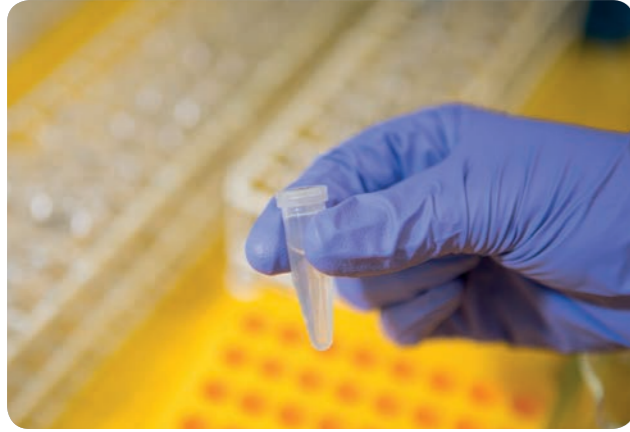
- Launch the Harry Keen Intermediate Clinical Fellowship. Named for a true diabetes pioneer, this award will provide the UK’s first dedicated support for diabetes researchers working in the NHS who are ready to establish their independence as future leaders.
- Provide more early career support for scientists and healthcare professionals to help them gain their first significant research grant.
- Continue to support our existing personal award schemes, and strive to boost our investment in the future.



Professor Trenell

Professor Michael Trenell is an NIHR Senior Research Fellow and the Director of Newcastle University’s MoveLab.

In 2006, an RD Lawrence Fellowship from Diabetes UK helped shape his career. He showed that walking an extra 45 minutes a day can improve Type 2 diabetes management just as well as some drugs do. He also began to develop the ‘Movement as Medicine’ programme, which helps people use physical activity to manage Type 2 diabetes. This programme underwent community trials and is evolving to become part of the next generation of patient support.



Professor Colin Dayan and other Type 1 vaccine researchers

“ This funding has already led to a bold new collaboration between UK diabetes scientists and will provide an immense boost for this field as we work towards new clinical trials our ability to halt the loss of insulin in Type 1 diabetes. Within ten years we hope to see the first vaccine therapies delivered to patients in the clinic.”

Professor Colin Dayan,
Cardiff University

Grow investment in UK diabetes research by our partners



We play an important role in funding diabetes research in the UK. But we cannot afford the huge sums of money needed to translate every promising study into a large clinical trial that might benefit people with diabetes.

To really make a difference, we need to make sure that every diabetes researcher with a bright idea and the evidence to back it up can win support from the UK's biggest research funders.

To achieve this we must help the diabetes research community work together to identify the latest research priorities, reveal gaps and secure increased investment.

We will:

- Bring together 'Clinical Studies Groups' of key diabetes research leaders in key topic areas. These groups will identify the most important clinical studies in diabetes, forge new partnerships and deliver high-quality applications to research funders. They will also help new research leaders develop the skills they need to lead large studies in the future.
- Ensure that our research support enables researchers to pursue follow-on investment from other funders.
- Examine the UK diabetes research portfolio to improve understanding of existing investment.
- Bring together research experts, other funders and people living with diabetes to identify priorities for research funding.
- Champion diabetes research priorities and be a catalyst for growth.

Working together towards a Type 1 vaccine

In early 2015, we announced over £4.4 million of investment for new research into a vaccine for Type 1 diabetes. As well as helping to delay or even prevent Type 1 diabetes in those at high risk, this work will also be an important step towards a cure for the condition, by making it possible to replace or regenerate lost insulin-producing cells.

Our investment is creating a national network of clinical trial centres that will allow more people with Type 1 diabetes to take part in research. Other funders and the commercial sector will be able to build on this strength, so that UK research can help move the world towards a cure.

Funded by Diabetes UK, with over £3.3 million from our National Charity Partnership with Tesco, this work also involved close collaboration and over £1 million in co-funding from Type 1 diabetes charity, JDRF. By working together we can achieve more than we ever could alone.



Members of the Grant Advisory Panel

“ Over the last ten years the involvement of people living with diabetes in Diabetes UK’s research processes has increased from virtually nothing to the significant involvement we have today. This is due to the willingness of the Research Team to really listen to us and treat us as important members of the team.”

Ann Middleton,
Diabetes UK
Science and Research Advisory Group

Give people with diabetes a louder voice in research



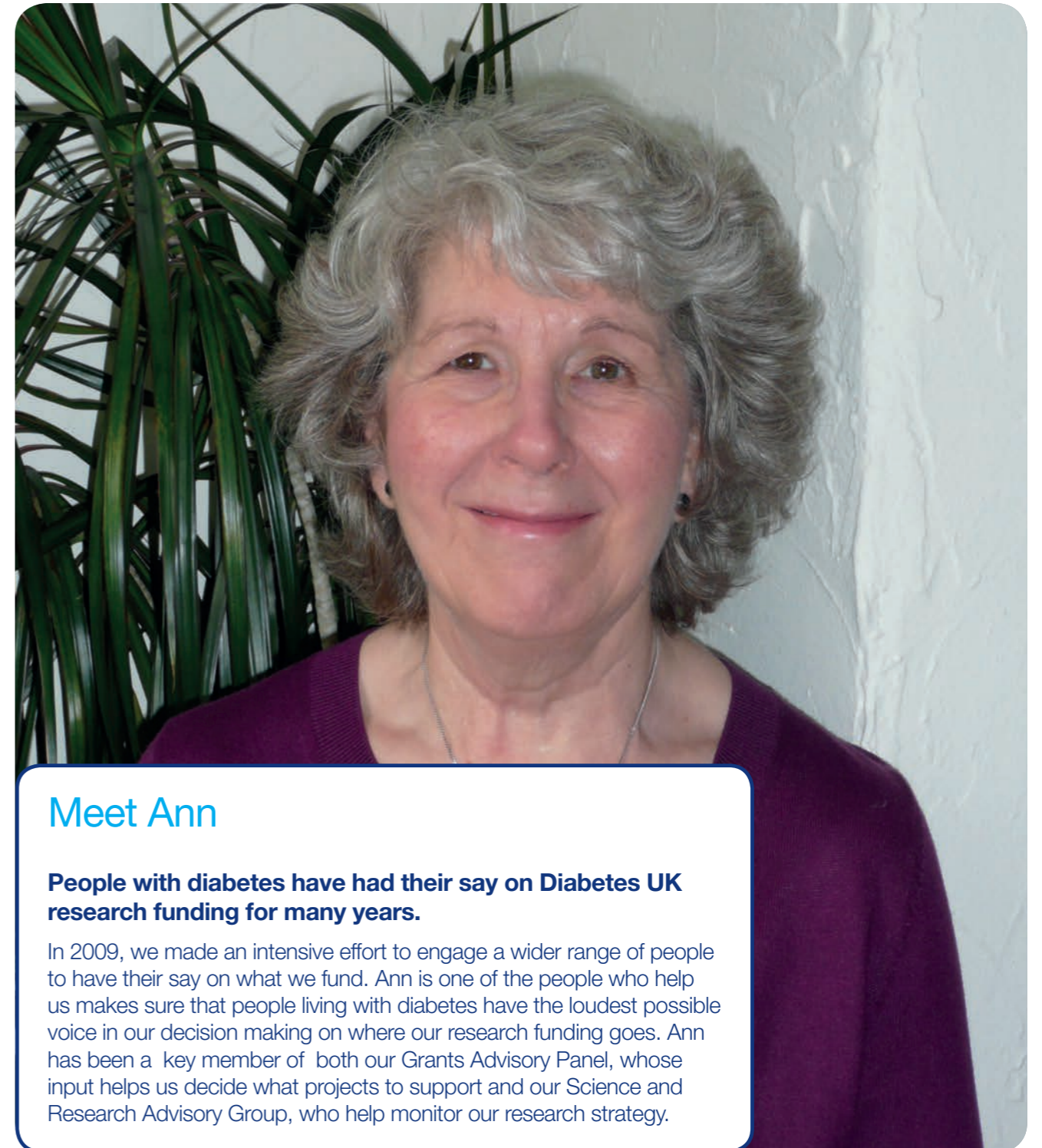
For research to achieve the greatest benefits for people living with diabetes, they must be involved in the funding process. We have worked in partnership with people with diabetes for many years, but this alone is not enough.

To inform national research funding decisions and the development of vital new studies, we need to uncover the views of as many people with diabetes as possible, and make them available to researchers and research funders.

Research priorities identified by people with Type 1 diabetes, their carers and their healthcare professionals, were published in 2012 by the James Lind Alliance. These are drawn on regularly in funding applications and we believe that similar priorities are needed for Type 2 diabetes. We also need to be certain that we and other funders work to apply existing funding priorities for all forms of diabetes.

We will:

- Work with partner organisations to develop public research priorities for Type 2 diabetes, identified by people with diabetes and those who provide their care.
- Ensure that the views of people with diabetes inform the work of diabetes Clinical Studies Groups and influence the priorities they develop.
- Champion the priorities of people with diabetes, holding ourselves and other research funders to account.



Meet Ann

People with diabetes have had their say on Diabetes UK research funding for many years.

In 2009, we made an intensive effort to engage a wider range of people to have their say on what we fund. Ann is one of the people who help us make sure that people living with diabetes have the loudest possible voice in our decision making on where our research funding goes. Ann has been a key member of both our Grants Advisory Panel, whose input helps us decide what projects to support and our Science and Research Advisory Group, who help monitor our research strategy.

Our work

Diabetes UK awards money to support the ideas of UK researchers. We help talented scientists and healthcare professionals become the diabetes research leaders of the future and to make targeted investments in specific research areas where there are important gaps or opportunities.

Our rigorous approach ensures that we only fund research of the highest scientific quality, which has the greatest potential to benefit people living with diabetes and offers value-for-money to our supporters.

We also support the UK's national diabetes conference, which brings together thousands of researchers and healthcare professionals for the exchange of information, evidence and ideas.

As we pursue our goals over the next five years we will take a flexible approach to help us respond to new opportunities as they arise. Every year we will evaluate the progress and impact of our work and report the findings in our annual report.

Join us

We urgently need your support to help us achieve our vision of a world where diabetes can do no harm and continue our funding for diabetes research. Please help by making a donation or talking to us about how your organisation can work in partnership with us.

Find out more:

www.diabetes.org.uk/research

Make a donation:

www.diabetes.org.uk/donate

Contact us at:

research@diabetes.org.uk

www.diabetes.org.uk

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